CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

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THE SOURCE EVALUATIONS IN THIS REPORT ARE DEFINITIVE.
THE APPRAISAL OF CONTENT IS TENTATIVE.
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1. The Scientific Department and workshops of Institute 160 had an estimated work force of 4,000. About 1,000 additional persons worked in the Production Department and at the OKBM. From these figures and from the number of tube plants in the USSR, a total of about 50,000 people were working in the plants controlled by the Chief Directorate for Tube Production. The total number of personnel of the Ministry of the Communications Equipment Industry could not be estimated 25X1 25X1

2. The production of magnetrons at Institute 160 could not serve as a clue regarding the production of radar sets, because, at first, many tubes were probably required as replacements for tubes About 100 sets operated at a wave length of about 10 cm. in 1951 25X1 estimated output of 3-cm magnetron tubes for the Meddo set at Institute 160 at 20 to 30 units per week.

3. During the first meetings with the Soviets, the German scientists declared the development of frequency modulating radar sets a hopeless affair, because they did not want to be detained in the USSR too long. The Soviets never came back to this project. A radar commission showed great interest in the German Pauke blind aiming device for aircraft.[1] the Soviets would require five times as much time for new development work as would be needed by the Western powers. 25X1 25X1

4. The entire output of metal-ceramic tubes produced by the HF Plant in Berlin-Oberschoeneweide was tested at the test field of Institute 160. The Tungsram Plant in Budapest turned in all new types of tubes developed there. 25X1 the Tungsram Plant was utilized by the Soviets for the copying of modern, American, filament-type tubes. 25X1

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5. The permanent magnet used in the SCR-584 set for the magnetron was a successful copy of the original American model. Helmuth Sprung, who worked on the development of magnet steels at Fryazino, was in contact with a development institute for magnet steels in Moscow. He stated that the Moscow institute was obsolete. Ferrites were produced in a special institute in Moscow, but it was not possible for Institute 160 to receive any materials from there. In 1950, a sudden improvement in the quality of the electric parts supplied to the institute. 25X1

6. Work on the development of travelling wave tubes had got into an impasse at Institute 160. These tubes were allegedly also developed at the MVD Institute for Direction-Finding Technique. This institute was subordinated to the 8th or 9th Chief Directorate of the Ministry of Internal Affairs. This Chief Directorate was also in charge of the development of atomic weapons and of radio intercept service.

7. Major Cherepnin (fnu) was the only Soviet engineer who would be capable of initiating the production of acceleration-proof tubes. 25X1
It was doubted that the Soviet output of such tubes met their requirements.

8. Production quotas fixed for workers at the tube plant were rather flexible and not stringently applied. The production of tubes had been given priority only recently, and the plant management greatly depended on the good will of the personnel.

9. The Radiation Laboratory Series, a 28-volume edition published by the Massachusetts Institute of Technology, was copied and published in an edition of 5,000 to 10,000 copies each. Volumes 6 and 7 on magnetrons and klystrons were available rather soon, while the 5,000-copy edition of Volume 25 on the theory of servo mechanisms was soon exhausted. 25X1

10. The Soviet scientific literature was partly very good. However, since authors of scientific books were paid badly, the Soviet engineers showed little interest in writing books. Translations paid much better. The Soviet printing firms were overloaded with secret literature to be printed. When, in 1950-1951, a book was to be printed, the Radiotekhnika Publishing Firm, which was comparable to the German Springe Publishing Firm, refused to print the book for this reason. The Radiotekhnika Magazine was not permitted to publish studies on new Soviet developments. 25X1

11. American studies which, prior to 1949, were available in the USSR before they were published in the United States were also kept secret. 25X1
one study was on an electronic recorder (Elektronenbahn) and a study on ultra shortwave transmitter tubes

12. the shortage of technical experts was compensated for by the excellent Soviet industrial organization, especially in the field of tube production. With personnel of average qualifications, the Soviets accomplished much. The production methods of the U.S. had been studied very carefully and evaluated for use by Soviet plants. Popov (fnu), the chief organizer of the Ministry of the Communications Equipment Industry, was a very successful organizer. By his personal initiative and by cutting down red tape Popov was successful in synchronizing the work methods of the individual plants and institutes, making experiences available to all of them, and developing most efficient work procedures. Major difficulties were caused by human weaknesses, which particularly hampered the cooperation of the development and production branches. Popov repeatedly visited Institute 160 for two or three weeks at a time. 25X1

13. In February 1947, Vice Admiral Berg stated that there were no young high-frequency engineers to graduate from the institutes of technology for the next years because the classes of those years had been killed during the war. An extensive

training program however, had been started, and many young engineers were to be available after 1950. [redacted] While, in 1948 25X1
and 1949, only individual young engineers were assigned to Institute 160, about 100 graduates arrived at Easter 1950 and about 400 young engineers at Easter 1951. Among them were many capable engineers. About 90 percent of the personnel at Institute 160 were women, who also served as engineers.

14. Radio amateurs were widely patronized by Admiral Berg, who had even published literature for amateurs. Among them were magazines which were edited perfectly and printed in an edition of 50,000 copies. The Radio Magazine was also very good. [redacted] at Institute 160 [redacted] no one cared when amateurs took parts from the institute supplies. 25X1 25X1

List of Tube Plants in the USSR

15. [redacted] Special technical tubes, such as postal tubes (Postroehren) were not manufactured. In Fryazino, only tubes with glass bulbs were manufactured. In early 1952, the initial steps for the production of reliable tubes were observed in Fryazino. Other tube plants [redacted] were: 25X1 25X1

Plant	Production
Institute 160 in Moscow/ Fryazino	Magnetrons, klystron tubes (glass types), television tubes, and high power transmitter tubes
Electrical Factory, Moscow	Television tubes
Svetlana	Klystron tubes with metal bulbs, including type 723.
Novosibirsk	Metal ceramic tubes and high power transmitter tubes with external anodes.
Tashkent	High power transmitter tubes with glass bulbs.
Saratov	Magnetrons and klystrons only for the 3-cm Meddo set. It was unknown whether the other tubes required for this set were also produced at this plant.
MGB Institute, Moscow	The plant is engaged in development only, probably of 0.8-cm tubes.
Radar Institute 108, Moscow	No production of tubes. It is doubted whether the plant is equipped with a tube laboratory.
Kalinin	Kalinin was mentioned in a request to investigate the production facilities for sub-miniature tubes forwarded to Fryazino in 1950.

[redacted] Comments: 25X1

1. The Pauke SRT was a blind aiming device developed by the Telefunken firm for fighter aircraft and special planes of the Luftwaffe.

   Pauke A operated at wave range λ = 61.....73 cm
   with about 6 arrested positions (Raststellen)

   Pauke S operated at wave range λ = 9 cm 25X1

2. Prior to November 1948, Major Cherepnin was assigned as Soviet expert for tubes to the Oberspreewerk in Berlin-Oberschoeneweide.

3. [redacted] Comment: [redacted] Cherepnin was reported to be working on technical difficulties at Tube Plant No. 617 at Novosibirsk. 25X1